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CONTENTS:

Horn—Variations of Color-markings in Coleoptera 25
Fox—Hymenopterological Notes 29
Dyar—Collecting Butterflies in the Yosemite Valley 30
Hart—On the species of Œcanthus 33
Smith—Elementary Entomology 35
Insects collected at Jamesburg, N. J., July 4, 1891 36
Notes and News 38
Entomological Literature 42
Doings of Societies 47

Variations of Color-markings in Coleoptera.

By GEO. H. HORN, M.D.

Recently the subject of variation in coloration has been discussed before the Society of American Naturalists with the view of eliciting an expression of opinion as to whether color variation proceeded in a regular course, or was hap-hazard and accidental.

My observations have been that variation proceeds in regular lines, easily demonstrable with sufficient material, produced by external influences which are at present but partly understood.

There is probably no branch of zoology better fitted to illustrate this point than Entomology, from the abundance of species and the frequent occurrence of genera with large numbers of species in which a greater or less similarity of marking is observable.

As a beginning, in the illustration of this subject, it is best to select a genus well known to all collectors by the numbers of species possible in most collections. Cicindela has therefore been chosen.

Any one in glancing over his series will perceive that there is a great similarity of marking between many species. This simi-

larity, which may be considered as the type of marking and illustrated by fig. 1 of the plate, representing *vulgaris* is the underlying pattern from which all the forms observed in our Cicindelæ have been derived.

Before going further it is well to present the following propositions that the argument and the illustrations may be understood.

1.—The *type* of marking is the same in all our species.

2.—Assuming a well marked species as a central type the markings vary,

a, by a progressive spreading of the white.

b, by a gradual thinning or absorption of the white.

c, by a fragmentation of the markings.

d, by linear supplementary extension.

3.—Many species are practically invariable. These fall in two series.

a, those of the normal type, as *vulgaris*, *hirticollis* and *tenuisignata*.

b, those in which some modification of the type has become permanent, probably through isolation, as *marginipennis*, *togata* and *lemniscata*.

4.—Those species which vary do so in one direction only. That is, supposing a species begins typically with markings similar to *vulgaris*, the variation may be either in the direction of thickening and increase of white as in *hyperborea*, *generosa* and others, or in the direction of thinning or fragmentation of the white with perhaps an entire loss of markings as in *hæmorrhagica*, *splendida*, or *obsoleta*.

The first two propositions must be considered as applying to the species of the genus collectively, the last two to the species separately.

The accompanying plate has been prepared to illustrate these propositions. It must, however, be understood that, in tracing the derivations from the typical, it is not possible to use one species as these modifications go on gradually through a number of species, one sometimes beginning where another ends.

In the plate fig. 1 represents *vulgaris*, which is a fairly typical species, following through *generosa* (2–3), *pamphila* (4), *hyperborea* var. (5), *togata* (6), *gratiosa* (7), *canosa* (8), we finally arrive at a perfectly white elytron as seen in some varieties of *dorsalis*.

Following in the other direction through *tenuisignata* (9), *marginipennis* (10), *Hentzii* (11), *sexguttata* (12), *hæmorrhagica* (13), and *splendida* var. (14), it will be observed that through a gradual thinning or absorption of the markings, or by their fragmentation and obliteration we arrive at the opposite result of elytra without any white markings whatever, as in many forms of *obsoleta*, *scutellaris*, *punctulata* and *hæmorrhagica*.

Those species which vary from the type in having the markings broken into spots, as 12-*guttata* or *Hentzii*, may lose the spots by a gradual decrease of size, so that they all seem to disappear nearly at the same time, or the spots may disappear successively, those on the disc being the first to go, while the marginal spots remain.

From our series it would be difficult to say which spot is the most persistent, but it is probably the apical lunule, as there are more with entirely dark elytra with slight traces of this spot than with any other, as shown in *abdominalis* and *punctulata*.

Forms like *lemniscata* (16) seem very far removed from the type, but many forms of *imperfecta* (15) show how the markings gradually leave the margin and tend by fusion to form a vitta at first somewhat oblique, but finally becoming nearly median.

The last two figures on the plate represent the markings of *Gabbii* (17) and *Saulcyi* (18), in which the ends of the bands or lunules are greatly prolonged. The latter form, which represents *dorsalis* as well, is but rarely seen so perfectly marked, the tendency being toward a greater extension of the white. The other species is scarcely variable, although equally a coast form.

Those species which retain a permanent divergence from the normal standard, such as *togata* (6) or *lemniscata* (16), are doubtless descendants from a normal type which has varied, and in which a variety has become isolated and perpetuated itself.

One result of an examination of my species with ideas here explained has been the discovery that *C. lunalonga* Schaupp is merely a variety of *pusilla* with markings a little better defined. Specimens before me establish the lead very distinctly.

In view of all the facts here presented the question might be asked, why do some species vary while others do not? While this matter is worthy of some thought, it is not possible to give a satisfactory answer. Some species doubtless vary from climatic causes. A notable instance will be seen in *hæmorrhagica*, which

extends from San Diego and Yuma in California northward to the head-waters of the Yellowstone, passing through about all possible varieties of climate and habitat, from sea-coast to mountain. On the other hand *hirticollis* occurs from Hudson's Bay to Arizona without variation, and the specimens of *lepida* from the New Jersey shore are not separable from those found in Nebraska. It seems hardly possible to make any generalizations on the subject. Doubtless the coast species vary to a greater extent taking them collectively than do the inland species, but it is impossible to go further in speculation as too many exceptions arise on all sides.

The subject of variation might be considered at much greater length with profit and more fully illustrated, but the desire to bring the article within NEWS limits has caused me to be brief.

The figures have been drawn to illustrate markings only, and no regard has been had to the form of the elytra, which varies considerably, and would introduce an element not pertinent at this time.

Should the method of thought which gave rise to the preceding remarks produce in some others thoughts as to the possibilities of variation, not only in color, but almost equally in form and sculpture there would be less synonymy to be corrected and a more truly scientific basis established for species.

EXPLANATION OF PLATE.

1.—*C. vulgaris*
2.—*C. generosa*
3.—*C. generosa*
4.—*C. pamphila*
5.—*C. limbata* ||
6.—*C. togata*
7.—*C. gratiosa*
8.—*C. canosa*
9.—*C. tenuisignata*
10.—*C. marginipennis*
11.—*C. Hentzii*
12.—*C. sexguttata*
13.—*C. hæmorrhagia*
14.—*C. splendida*
15.—*C. imperfecta*
16.—*C. lemniscata*
17.—*C. Gabbii*
18.—*C. Saulcyi*

A writer in *Engineering* says "that in sinking plumb lines down shafts the accuracy of the work is often seriously impaired by spiders attaching their webs to the lines and drawing them toward the walls, often with sufficient tension to introduce material errors in the position of the plumb bobs."

HYMENOPTEROLOGICAL NOTES.—III.

By Wm. J. Fox, Phila., Pa.

(Continued from page 11, vol. iii.)

Calliopsis abdominalis Cress.

A variety of this species occurs rather commonly in Gloucester County, N. J. It differs from typical *abdominalis* as follows: the thorax, with the exception of the tubercles and tegulæ, is entirely black; the abdomen has the base of the first segment above and base of the second only, reddish fulvous, the apical margins of segments 1—5, broadly testaceous; the male has the abdomen reddish fulvous, the segments each with a black fascia.

Numerous females and several males taken in Gloucester Co., N. J., from August 16th to September 9th, 1891.

Epeolus pusillus Cress.

E. pusillus Cr., Proc. Ent. Soc. Phila. vol. ii, p. 398, ♀.

The male of this insect, which has hitherto been undescribed, differs from the female by its smaller size; the clypeus being covered with pale pubescence; the eyes more strongly converging towards the mouth; the antennæ, first three joints excepted, testaceous beneath; tip of the abdomen reddish; nervures and stigma testaceous; the antennæ are shorter and stouter. Length 6 mm.

A male and female of this species taken in Gloucester County, N. J., August 16th and September 5th.

Epeolus compactus Cress.

This species has only been recorded from Texas, Colorado, Nevada, California. I have a specimen taken in Camden County, N. J., during May.

Melissodes fimbriata Cress.

A male specimen of this insect was taken at Cape May, N. J., on June 14th. It has only been recorded from Texas.

Zethus Slossonæ n. sp.

♀.—Black, a spot on each side of the clypeus, two transverse elongate spots behind the base of the antennæ, a dot in the eye emargination, posterior orbits, line on the collar, much narrowed and slightly interrupted medially, a large spot at the top of the mesopleuræ, two small spots on the scutellum and postscutellum, two large ones on the posterior face of the metathorax, an irregular line on the apical margin of the petiole, which extends up a little way along the sides, line on anterior femora behind, and the middle tibiæ, more or less, all yellow; the scape and fol-

lowing two antennal joints, the mandibles, except apex, the tegulæ, the legs, except the posterior femora medially and the coxæ, reddish brown; clypeus rounded laterally, with sparse, shallow, punctures, its anterior margin armed with three widely separated teeth, the middle tooth largest; just above the antennæ there is a strong, transverse ridge; the antennæ are situated just beneath each end of this ridge, and are therefore widely separated; front with very large, deep, in some places confluent punctures, the punctures becoming less strong on the vertex and are sparse and shallow on the cheeks. Thorax punctured as on the front, on the sides and beneath with silvery-sericeous pile; scutellum with an impressed line, the punctures sparse; postscutellum with the posterior margin produced into a strong angle; metathorax subopaque, with a medial impressed line, with a few oblique, widely separated striations towards the sides, the metapleuræ with indistinct, shallow punctures; wings fuscous, with a violaceous reflection, which is especially strong on the apical portion, brownish along the costa, stigma yellowish, nervures black, second submarginal cell very narrow at the top, the third submarginal cell broader above than beneath; legs clothed with silvery pile. Abdomen clothed with sericeous pile, the petiole much swollen medially, and is contracted before the apex, a little broader than high, and with large, sparse, punctures above, the pedicle of the second segment takes up less than a quarter of the segment, the base of the pedicle black; the remainder of the abdomen claret-brown, shining, smooth above, beneath with large, sparse punctures.

♂.—Differs from the female as follows: the clypeus is entirely yellow, the medial tooth not so large; the third antennal joint black, and is more than a third longer than the fourth, joints 10–12 reddish, the hook black; the eye emargination is narrower; the medial impressed line of the scutellum is stronger; the legs without any trace of yellow; the second submarginal cell is broader above than in the female. Length ♀♂ 16 mm.

Three specimens, one female, two males. Collected by Mrs. Annie Trumbull Slosson, near Punta Gorda, So. Florida. It is most closely allied to *Z. azteca* S., from which it differs by the transverse ridge behind the antennæ. It differs from *Z. Poeyi* S., from Cuba, by the toothed clypeus and the shorter pedicle of the second abdominal segment.

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Collecting Butterflies in the Yosemite Valley.

By HARRISON G. DYAR.

My wife and I spent four months of last year in the Yosemite Valley, Cal., to enjoy the grand scenery and the pure air of the Sierra Nevada and make collections of the Lepidoptera of that region, and it has occurred to me that some notes of our experiences might interest the readers of ENTOMOLOGICAL NEWS.

The valley, as may be seen from a map, is situated on the west slope of the Sierra Nevada, and through it the north branch of the Merced River flows. The general course of the river is southwesterly at this point and it plunges over two falls called the Nevada and Vernal to a depth of about 3000 feet below the general level of the surrounding country and flows, with but slight descent, for a distance of five miles between nearly vertical walls which are, on an average, a mile apart. This cañon is the Yosemite Valley, and its level floor would be covered with fine trees and shrubs were it not for the work which is being done by those in charge of the valley, who, I am sorry to say, have already succeeded in spoiling the once picturesque beauty of Mirror Lake by means of a dam and other improvements (?).

Lepidoptera were abundant during the first part of our stay, more especially the butterflies; we found but few moths. Later in the season they became much less common, and it was more and more difficult to obtain larvæ as nearly all the small plants died by reason of the dry season which set in soon after we arrived. We collected forty-nine species of butterflies, but not all were found on the floor of the valley. *Papilio rutulus* and *P. eurymedon* were common, but *P. indra*, which is a true mountain species, and occurred about the edge of the valley at an altitude of 7000 feet above the sea, was seldom seen there, although a few examples wandered down. *Neophasia menapia* was common towards the end of Summer flying slowly about the tops of the *Pinus ponderosa*, or alighting on flowers. *Pieris beckerii* and *P. sisymbrii* were found in considerable abundance on the summit of Cloud's Rest, a peak 10,000 feet high, overlooking the valley, but I did not see them elsewhere. Several species of *Anthocharis* occurred, but not in the valley proper. *A. lanceolata* was found on the talus at different altitudes, but they did not appear in the valley, and it is surprising how closely they confined themselves to the rocks, as if aware that the marbled colors of the lower surface of their wings were only fitted to harmonize with the gray granite of the broken rocks. The ubiquitous *Colias eurytheme* was to be seen all Summer, and I captured one male specimen of *C. behrii*, to which I shall again refer. *Danais archippus* was not uncommon, and two eggs of this species were found on a wild gooseberry bush, where they had been laid apparently by accident (there was no milkweed near). The larvæ

that hatched from them refused gooseberry, and would certainly have died had I not supplied them with their ancestral food. Of *Argynnis*, three species occurred, *A. epithore* in the Spring, followed by what is probably *A. monticola*, though there seemed to be two very closely allied forms, perhaps only varieties, in one of which the marginal spots on the lower side of hind wings were narrower than in the other and sometimes slightly touched with silver. Both these forms were taken *in coitu* and always with a mate of the same form. *A. leto* appeared still later, the first male being seen July 10th, and first female July 21st.

Of the other species captured, I will notice only the most interesting. *Lemonias virgulti* was common in the Summer on flowers and sage brush bushes, more especially on the talus around the valley and above Vernal Fall.

Thecla grunus occurred in swarms around the live oak trees (*Quercus chrysolepis*) first appearing about July 1st and continuing all Summer. The full grown larvæ were found in abundance on young shoots of this tree about the first of June. *Pyrgus ericetorum* was seen on only one day when we captured several examples feeding on the flowers of the Pussy's Paws (*Spraguea umbellata*), but saw none afterward, though we went to the same place the next day.

About the middle of September, after nearly all my larvæ had stopped feeding, we took a trip to the high Sierras to climb Mt. Lyell, a peak 13,000 feet high. We left Yosemite on hore-back with Mr. J. B. Lembert, as guide, who owned a small farm at Soda Springs, high in the mountains, near the head of the Tuolumne River before the place was included in the National Park. On September 20th we made the ascent of the peak, and when about a quarter of the way up on a spur of the mountain overlooking the end of the glacier, a specimen of *Colias behrii* was started up which I succeeded in capturing. No more were seen that day as the weather soon became threatening, and by the time we reached the top of the glacier, the clouds had begun to float in over the peaks. On another day, September 22d, we went to some mountain meadows, 10,000 feet high, where Mr. Lembert had formerly seen some of the "little green butterflies" (*C. behrii*), but met with no success, and were obliged to return almost immediately in a dense snow storm.

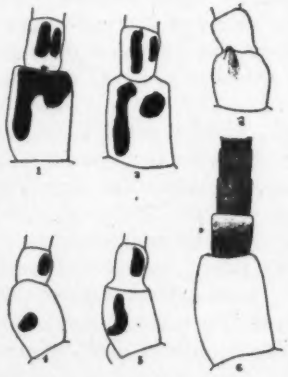
When we returned to the valley after a day's ride from Soda

Springs, I found that most of the larvæ, which had not ceased feeding when I left and which I had tied out in bags on their food-plants, had been cut off and destroyed by a crazy Indian, called "Loco" by the children of the valley. This made a rather disastrous ending to an otherwise quite successful collecting season.

ON THE SPECIES OF ŒCANTHUS Serv.

By CHAS. A. HART, Champaign, Ill.

Although the snowy, or tree cricket is commonly referred to as *Œcanthus niveus*, there are three or four species quite common and widely distributed, one of which, *Œ. fasciatus*, is in this State (Illinois) more abundant than *niveus*. I have just had occasion to examine a large series of specimens in the collection of the Illinois State Laboratory of Natural History including all the species yet recorded from Illinois. After a fairly satisfactory assortment of the specimens with the aid of the characters indicated by Prof. Jerome McNeill in "Psyche," vol. vi, p. 6, I noted that the coloration of the antennæ in each species had a perfectly distinct and invariable pattern of its own in all specimens examined. This character is not affected by sex, and seems to be the most reliable and ready means of separating the species. Some of these changes of pattern were noticed by Dr. Fitch in his description of *Œcanthus niveus* (Third Report on Insects of N. Y. p. 95) as characterizing varieties of that species, but the specific identity of these forms seems now well established.



[EXPLANATION OF CUT.]

Basal joints of antennæ of *Œcanthus*, under surface. (The difference in the sutures is due to the changing appearance of the sutural membrane in different positions of the antennæ) 1 and 2, *Œ. fasciatus*; 3, *Œ. bipunctatus*; 4, *Œ. niveus*; 5, *Œ. angustipennis*; 6, *Œ. latipennis*.

Œ. bipunctatus De G. has the apex of the scape prolonged beneath, forming an acute blackish tooth. The fore wings are conjointly marked with a fuscous spot near middle, and a large basal spot.

Œ. fasciatus Fitch, presents an extraordinary range in depth

of color, without, however, any actual change of pattern. In the palest specimens, approaching *niveus* in color, the scape has on its under surface an inner black longitudinal line, straight, or with the basal end turned slightly outward. Exterior to this and near the apex of the joint is a black dot. The second joint has a similar pattern. The flagellum is luteous or olivaceous, never annulated with darker wings exteriorly as in *angustipennis* and *niveus*, though the sutures are often slightly paler. The legs vary correspondingly from pale greenish to black. As the color deepens, the outer dot in the antennæ coalesces with the end of the line, forming Dr. Fitch's var. *b*. The lines also thicken, the dot enlarges, the black extends around the apex, and from the dot toward the base, until the antenna becomes entirely black. This species has strong hind tibial spines, the last joint of the maxillary palpus is clavate, and the fore wings in the male are wider than in *angustipennis*.

In *Œ. angustipennis* Fitch, the scape has on its under side a longitudinal black vitta, the basal end of which curves distinctly inward; the second joint has a black oval spot beneath. The flagellum is pale, the outer part annulated with brownish at the tips of alternate joints. This species is also known by the very narrow fore wings of the male and the weak spines of the hind tibia.

Our palest species is *niveus* De G., which is almost colorless, but in all specimens seen possesses a nearly circular black spot on the under side of the first and second joints. The flagellum is pale, usually annulated as in *angustipennis*. The tibial spurs are as in *fasciatus*, and the fore wings are moderately broad.

Our largest species, *Œ. latipennis* Riley, lacks any distinct markings on the first two joints. The flagellum is decidedly suffused with reddish brown basally, but the outer portion is not annulate with darker. The male has the fore wings slightly wider proportionally than in *niveus*.

Fasciatus was very abundant this fall along the roadsides; *niveus* and *angustipennis* were taken this Summer at sugar in the evenings; our specimens of *latipennis* are all from the southern part of the State.

"I wish I was human," said the centipede. "It would ruin you," returned the cricket; "just think of having to buy shoes for yourself."—*New York Herald.*

ELEMENTARY ENTOMOLOGY.

LEPIDOPTERA–HETEROCERA (Moths).

By Prof. JOHN B. SMITH, New Brunswick, N. J.

All the Heterocera are commonly termed moths, and moths as distinguished from butterflies rarely have a distinctly clubbed antennæ, and do not usually carry the wings upright, the upper surfaces opposed, when at rest. In some of our Geometridæ the wings are sometimes carried butterfly fashion, but here there is no trace of a club to the antennæ, and where the antennæ might be called clavate, the posture of the wings is distinctly decumbent. The term "heterocera" means variously horned, and, indeed, all kinds of variation in antennal structure is found in the series, save that in American forms there is no distinctly clavate type represented. The terms expressive of antennal modifications are best explained when the necessity for their use arises.

Perhaps the most important character for the higher divisions is found in the venation, and under our present system a knowledge of this is absolutely essential to a proper understanding of relationships, or to enable an insect to be referred to its proper family. Experience brings a certain knowledge of superficial appearances which serves to place most specimens, but even experienced lepidopterists have been not infrequently misled by trusting too much to such appearances. Wings can be prepared for the study of venation in various ways. On larger moths a deft operator can remove enough of the scales with a camel's-hair brush to enable him to make out the course of all veins readily. Smaller moths, where the wings are for temporary use only, can be soaked for a few minutes in carbolic acid, which will render all but the veins transparent. The wings may be afterward thrown away or mounted in balsam without further preparation. Where permanent specimens are desired the wings are first placed in alcohol a few moments to extract grease, then placed in a saturated solution of chloride of lime until all color disappears. They are then washed in clean water, dried, and are ready to mount on cards with gum, on slides with balsam, or in any other way fancy dictates. Where rapid bleaching is desired, a drop or two of hydrochloric acid to the chloride of lime solution will liberate chlorine gas and cause an almost instantaneous bleaching. It will also cause an odor that will drive well disposed persons out

of the room, and will further, unless watched carefully, eat into the membrane of the more delicate wings. My practice, when I want rapid results, is to get the wings into the lime solution, set the dish on the window-sill *outside*, drop in my acid, and close the window until chemical action ceases. The wings are then ready for study. It is by no means necessary to go through this process with every new form. When the general course of the veins is known a few scales removed on the underside, at the right spot, determines the matter. Where a wing is mounted in balsam after bleaching, great care must be exercised lest weak veins be rendered so transparent that they are overlooked, and folds must not be mistaken for veins. A fold is often much more distinct than a vein, but looks solid, with irregular edges, while a true vein has clean cut edges and is a tube. For forty years even the best European students had mistaken a fold for a vein in some *Zygænidæ* until I pointed out the error, and on the other hand I was caught napping and failed to see a true vein in *Ceratho*sia because made too transparent in balsam.

If I have been somewhat diffuse on the subject of preparing wings for study, it is only because in venation we have the key to the present classification, and without it determination of family is guess work, more or less correct according to the experience of the guesser.

In a normal heterogeneous wing the primaries have 12, rarely 13, the secondaries 8 veins. On the secondaries the number may be increased to twelve or reduced to four, and it is in the secondaries that we find some of our most useful characters.

In the next paper the usual type of venation will be figured and described.

Some of the Insects collected at Jamesburg, N. J., July 4, 1891.

HYMENOPTERA.

By W. J. Fox.

(The rarer species.)

Elis 4-notata
Pompilus fuscipennis
Pompilus virginicus
Trypoxylon tridentatum
Odynerus birenimaculatus

DIPTERA.

By C. W. JOHNSON.

Pachyrrhina incurva
Tipula fasciata
Chrysops vittatus
" univittatus
" callidus
" niger
" fallax
" flavidus
" obsoletus
Therioplectes trispilus
Leptogaster favillaceus
Stichopogon trifasciata
Dasyllis tergissa
" flavicollis
Erax furax
Proctacanthus rufus
Bombylius atriceps
" sp.
Anthrax lateralis
Argyramæba analis
Geron macropterus
Psilocephala albifrons
" pictipennis
Psilopus scobinator
" patibulatus
Syrphus americana
Sphærophoria cylindrica
Eristalis dimidiata
Mesograpta geminata
Platychirus hypoboreus
Xylota anthereas
Rivellia conjuncta
Tephronota humilis
Colobata antennipennis
Lauxania obscura
Trypeta bella
Sapromyza compedita

COLEOPTERA.

By PHILIP LAURENT.

(Those species marked † were quite common.)

Cicindela punctulata†
Gyrinus lugens?†
Dineutes vittatus†
Coccinella 9-notata†
Scymnus terminatus
Melanotus cribulosus?
Limonius basillaris
Agrilus ruficollis
Brachys ærosa
Lucidota atra?†
Pyropyga nigricans†
" decipiens
Photuris pennsylvanica
Chauliognathus marginatus†
Podabrus rugulosus†
Telephorus scitulus†
Collops 4-maculata
Onthophagus hecate†
Serica trociformis
Anomala lucicola†
" oblivia
Strigoderma pygmæa
Chlamys polycocca
Cryptocephalus venustus†
" congestus
Pachybrachys binotatus
" atomarius
Chrysochus auratus†

Paria 4-notata
" aterrima
Graphops pubescens
Colaspis flavida
" costipennis (rare)
Diabrotica 12-punctata†
Haltica foliacea?
Dibolia ærea
Odontota dorsalis
Cistela sericea
Mordella scutellaris†
Macrobasis unicolor†
Eugnamptus angustatus†
Pterocolus ovatus
Læmosaccus plagiatus
Centrinus scutellum-album
Eurymycter fasciatus (rare)

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

[The Conductors of ENTOMOLOGICAL NEWS solicit, and will thankfully receive items of news, likely to interest its readers, from any source. The author's name will be given in each case for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for certain issue. Owing to low subscription rate, "extras" will be charged for, and when they are wanted, it should be so stated on the MS. along with the number desired. The receipt of all papers will be acknowledged.—ED.

ON a Continental forty-five dollar bill, issued on the 14th of January, 1779, is represented an apiary in which two beehives are visible, and bees are seen swarming about. The motto is "*Sic floret Respublica*—thus flourishes the Republic." It conveys the simple lesson that by industry and frugality the Republic would prosper.—*Harper's Monthly.*

Dr. GEO. D. HULST has donated his collection of Lepidoptera to Rutgers College. He will retain for the present the families in which he is working, but everything else goes to the college. The collection is one of the richest in *Catocala*, and contains a very large number of types in the Geometridæ and Pyralidina. There are nearly 2500 named species and much undetermined material, some yet undescribed.—J. B. SMITH.

FOOD-PLANTS OF LIMACODIDÆ.—So far as I have observed, the larvæ of moths of this family feed on the leaves of nearly all, if not all, deciduous trees and shrubs, and readily change from one food-plant to another. This is in accord with the observations of Dr. Kunze (ENT. NEWS, vol. ii, p. 208) on *Parasa chloris*, as it will be noticed that all the plants mentioned are deciduous trees, except the Bayberry (*Myrica cerifera*), which is a shrub.—HARRISON G. DYAR.

"I HAVE never looked at this lovely thing (*Papilio marchandii*) with its delicate form and brilliant hue, without my thoughts reverting to the long past builders of the temples and altars of Palenque and Copan; the butterfly flitted through the tropical groves in their day, as now, but the inhabitants of the old dead cities have passed away, their names, their history unknown! Birds, reptiles and insects now alone tenant the forest where once stood the populous cities, the kings and priests of which, with their slaves, sycophants, long ages ago have gone to rest; naught remains of their past greatness but the moss-coated and time-worn ruins of altar and idol, and the frail, golden butterfly hovers, suspended in mid-air, over the monster face of some fallen dagon, which far back beyond even 'the night of time,' received its meed of human sacrifice; in imagination, we can see the temples restored, the long train of devotees, all the paraphernalia of pagan worship, we can hear the sound of music, the shrieks of the agonized prisoner about to be offered as a propitiation to some monstrous conception of barbaric superstition; but all now is hushed; priest, cacique and victim alike, are gone, fallen are the idols, giant trees grasp with their roots the ruins of the temples, and creeping vines and gorgeous flowers mingle with the sculpture of the marvelous shrines; scarce a sound is heard save the rustling of some snake gliding stealthily to its hole, or shimmering lizard running over leaf or twig." (Lepidoptera, Rhopaloceres and Heteroceres, H. STRECKER.)

LIST OF DRAGONFLIES taken at Lake Quinsigamond, Worcester, Mass., during the seasons of '89 and '90.

1. *Calopteryx æquabilis* Say
2. *Argia putrida* Hag.
3. *Ischnura verticalis* Say
4. *Enallagma Hageni* Walsh
5. " *civile* Hag.
6. " *signatum* Hag.
7. *Nehalennia irene* Hag.
8. *Lestes hamata* (Hag. 1862)
9. " *rectangularis* Say
10. " *vigilax* Hag.
11. " *unguiculata* Hag.
12. " *forcipata* Ramb.
13. *Anax junius* Dru.
14. *Æschna janata* Say
15. " *constricta* Say
16. " *verticalis* Hag.
17. " *heros* Fab.
18. *Neuraschna vinosa* Say
19. *Gomphus exilis* Selys
20. " *spinosus* Selys
21. *Cordulegaster maculatus* Selys
22. *Macromia illinoensis* Walsh
23. *Cordulia semiaquea* Burm.
24. " *princeps* Hag.
25. " *cynosura* Say
26. *Libellula exusta* Say
27. " *quadrimaculata* L.
28. " *pulchella* Dru.
29. " *quadrupla* Say
30. " *incesta* Hag.
31. *Celithemis eponina* Dru.
32. " *elisa* Hag.
33. *Plathemis trimaculata* De Geer
34. *Mesothemis simplicicoitis* Say
35. " *longipennis* Burm.
36. *Leucorhinia proxima* Calv.
37. *Diplax costifera* Uhler
38. " *rubicundula* Say
39. " *semicincta* Say
40. *Perithemis domitia* Dru.

They were identified by Miss Wadsworth, of Hallowell.

E. F. HITCHINGS, Bucksport, Me.

THE most beautiful as well as pleasing emblem among the Egyptians was exhibited under the character of *Psyche*—the Soul. This was originally no other than a butterfly, but it afterwards was represented as a lovely female child with the beautiful wings of that insect. The butterfly, after its first and second stages as an egg and larva, lies for a season in a manner dead, and is enclosed in a sort of coffin. In this state it remains a shorter or longer period; but at last bursting its bonds, it comes out with new life, and in the most beautiful attire. The Egyptians thought this a very proper picture of the soul of man, and of the immortality to which it aspired. But they made it more particularly an emblem of Osiris, who having been confined in an oak or coffin, and in a state of death, at last quitted his prison and enjoyed a renewal of life. This symbol passed over to the Greeks and Romans, who also considered the butterfly as the symbol of Zephyr.—*Cowan, Curious Facts.*

WINTER INSECTS.—On a Winter day, when the sere landscape is enlivened by an unclouded sun, let his genial rays tempt the reader to a stroll in the Pennsylvania woods. He may be cheered by no bird song; no plants except a few evergreen leaves may brighten his path, but insect life will be there to welcome him.

Those merriest of dancers, the gnats, come forth from the moist earth at the call of the sun. Mosquito-like, they have passed their immature life in the water, and the cases of the little wrigglers are ready to burst open and liberate the winged insects whenever the sun peeps forth from the clouds. This may occur on a sunny day, even when the temperature of the air is far below the freezing point.

Arctic explorers tell us that as far North as they have gone, away up in the icy fields of Greenland, even where there is no vegetation, these gnats, or species so closely resembling them that only naturalists can detect the difference, are found dancing on wing in the sunlight or clinging to the sides of boats and sledges.

As we continue our walk through the Winter woods we turn over a log and find crawling about beneath it small, black beetles, a few tough-skinned, hard-headed grubs, and now and then a spider. If the sun shines brightly, even though snow may lie deep on the ground, wasps will be tempted forth from crevices of bark in which they have lain dormant with the cold, and after becoming thoroughly warmed they will take wing through the woods.

A butterfly known as the Mourning Cloak, richly dressed in brown and blue velvet, bordered with gold, comes forth from its snug retreat when the Winter sun is bright and wings his way through the woods as gayly as he would in mid-summer. His hiding-place has been in the wind-cracks of an old chestnut tree or a bunch of clinging leaves. He may be seen flitting about even when the snow lies several inches deep. Far off in the Rocky Mountains and among the Alps of Switzerland butterflies of various species may often be seen flying over the snow and glacier ice.

If we displace the rustling leaves that cover the ground in the woods

we notice now and then a large black beetle running quickly from under our feet. If snow is on the ground we shall not see him, but in its absence we shall find him even on the coldest day. He evidently knows where to hide himself when the unwelcome snow and ice appear.

This torpor of insects is a very different condition from the hibernation of warm-blooded animals, such as the bear and the marmot. In the latter a slow and feeble circulation and respiration are kept up, and the creature lives on the fat that had been stored up in its body before the Winter sleep came on.

Different insects are affected by cold in very different degrees. Many, like the common house-fly, become torpid before the temperature falls to the freezing point. Long before frost comes they succumb to the moderate cold of autumn. There is no doubt that severely cold Winters are attended with great loss of insect life, which in a milder season would have survived.—S. F. A. in *Philadelphia Times.*

Identification of Insects (Imagos) for Subscribers.

Specimens will be named under the following conditions: 1st, The number of specimens to be unlimited for each sending; 2d, The sender to pay all expenses of transportation and the insects to become the property of the American Entomological Society; 3d, Each specimen must have a number attached so that the identification may be announced accordingly. Exotic species named only by special arrangement with the Editor, who should be consulted before specimens are sent. Send a 2 cent stamp with all insects for return of names. Address all packages to ENTOMOLOGICAL NEWS, Academy Natura Sciences, Logan Square, Philadelphia, Pa.

Insects have been named for W. W. Newcomb, Henry C. Denslow, Geo. Miller, D. S. Harris, W. M. Hill, J. H. Talmage, J. H. Bomberger.

ON SENDING INSECTS BY MAIL OR EXPRESS.

We receive so many insects in a broken condition, especially those sent to the NEWS for determination, that we think a few words on packing and transportation will be appropriate. We also think we should receive some reward for our trouble in naming and not be compelled to drop the specimens in the waste basket. **Never send pinned or spread specimens by mail in a single box without an outer cover.** Have the box which is to contain your specimens as light in weight as is consistent with strength; a good plan is to glue little square uprights in each corner of the box and it will then stand much pressure. Have the bottom of the box lined with quarter inch cork and drive the pins well in; should one heavy specimen loosen it will ruin all the rest. Have the size of box proportionate to the number of your specimens, and pin them in as closely as you can without injury. This box should then be placed in a larger one and the space between the two filled with some springy material such as hay, cotton, excelsior packing, etc., **loosely packed** in. **Don't** use an outer box **without having sufficient space between it and the inner,** as it is a waste of time and money

as it will be useless. **Don't** pack the springy material so tightly between the two that it is useless as a preventive of jarring. Don't have them come in contact on one side or on the bottom. If the specimens are many and the box large, send by **express.** Small packages may be sent in comparative safety by packing the box containing your specimens in a large amount of excelsior cotton, etc., loosely around the box and then making into a bundle by enclosing the whole with hardware paper or other strong and heavy paper; in this way the postage on the heavy outer box is saved. It is a good plan to always put a nice layer of raw cotton over the cork, but never put this over the top of the specimens. When sending Coleoptera with heavy bodies, or moths, always secure the body by a wisp of cotton, which should be put on as follows: Take a wisp the required length and tease it out about one-half inch in width; run the pin through on end and give it a couple turns around the pin so that it holds tightly and lies close to the place where the pin issues from the thorax, then bring it around the end of the abdomen and then fasten to the pin above by a couple of turns. If the bodies are very large, as in the Sphinges, a pin should be placed on either side to prevent them swinging around on the pin. Always remember if one becomes loose it ruins many, and that "one fine, faultless specimen is worth no end of trash." Neuroptera Odonata should always have a **bristle passed through the abdomen** into the thorax when fresh, otherwise they are almost always broken off in transportation. Always put your name and full address on the box.

Entomological Literature.

HARDWICKE'S SCIENCE GOSSIP (London), December, 1891.—An introduction to the study of British Diptera, E. Brunetti, figs. European butterflies, R. B. P.

ANNALS AND MAGAZINE OF NATURAL HISTORY (London), December, 1891.—On the structure of the ocelli of Lithobius, V. Willem.

MONOGRAPH OF ORIENTAL CICADIDÆ by W. L. Distant. Part iv, pp. 73–96, pls. 7–9.* London, Calcutta, Berlin, September, 1891.

COMPTE RENDU. SOCIETE ENTOMOLOGIQUE DE BELGIQUE, Nov. 7, '91.—Causeries Odonatologiques, No. 5: Two new groups of Agrionina from Madagascar, *Nesolestes* and *Nesocnemis*,* E. de Selys Longchamps. Note on *Amara convexior* Steph. or *continua* Thom., A. P. de Borre.

CANADIAN ENTOMOLOGIST, December, 1891.—List of writings of the late Henry Edwards, W. Beutenmüller. [This list does not contain Mr. Edwards' paper "Inguromorpha Slossonii Hy. Edw.," published in ENT. NEWS, vol. ii, pp. 71-72, April, 1891, and which was probably the last he ever wrote.] A catalogue of the Thysanoura of North America, A.

* Contains new species other than North American.

D. Macgillivray. The genus *Packardia* G. & R., H. G. Dyar. Descriptions of some butterfly larvæ from Yosemite—iv., id. On *Catocala flebilis* and *C. fratercula*, A. R. Grote. On some British Columbia Coleoptera, Rev. J. H. Keen. Notes.

ENTOMOLOGISCHE NACHRICHTEN (Berlin), xvii, 23, December, 1891.—On the capture and preparation of Gallflies, E. H. Ruebsaamen. On a *Syrphus* developing on *Cirsium*,* C. Verhoeff. *Rhizotrogus ater* and *fuscus*, a reply to Dr. Kraatz, E. Brenske. No. 24, December. On German Psocidæ, H. Tetens.

MITTHEILUNGEN DER SCHWEIZERISCHEN ENTOMOLOGISCHEN GESELLSCHAFT. viii, 8, Schaffhausen, December, 1891.—Some new Orthoptera,* A. Pictet and H. de Saussure; *Pharmacus* n. gen.; two new species of *Gryllacris* are described from "America!" Description of some new Snout Beetles,* Dr. G. Stierlin. Description of an unpublished species of the genus *Anaspis* Geoffroy,* M. Guillebeau. Coleoptera Helvetiæ, pp. 225–256, Dr. G. Stierlin.

THE ENTOMOLOGIST (London), November, 1891.—*Tortrix donelana* Carpenter, R. South. The Diamond-back moth (*Plutella cruciferarum*), J. Arkle. Captures at the electric light, R. Adkin. Notes on the synonymy of noctuid moths, A. G. Butler (includes some N. American species). Coleoptera collected by Mr. Pratt on the upper Yang-tsze-kiang, and on the borders of Tibet, 2d notice,* H. W. Bates.—December, 1891. Early stages of *Argyrolepia maritimana* Guen., G. Elisha, 1 pl. Insect pigments, T. D. A. Cockerell. Rearing *Limenitis sibylla* and *Pararge egeria*, J. H. Fowler. Cure for the ravages of the larvæ of *Nematus ribesii* and *Abraxas grossulariata*, J. N. Still. Reunion between the same moths, R. Adkin.—January, 1892. Mr. Butler's notes on synonymy of North American Noctuidæ, J. B. Smith. Local British lists, notes and captures.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE (London), November, '91.—Entomological notes from Port Darwin, J. J. Walker. Note on three Australian Carabidæ,* H. W. Bates; *Eurylychnus* n. g. Sexual characters in the palpi of *Mordellistena abdominalis* F., G. C. Champion. Notes on the British species of *Haltica*, J. Edwards. Further remarks on the genus *Eugaster* Serville,* W. F. Kirby. Life-history of *Hypsipetes ruberata*, N. M. Richardson. Addition to the list of British Hemiptera, E. Saunders. An earlier name for *Tinagma betulæ*, H. T. Stainton. *Micropteryx caledoniella*: another new species, probably from birch,* A. F. Griffith. Notes on *Eupœcilia sodaliana* Haw. (*amandana* H. S.), with description of the larva, W. G. Sheldon. Some new, etc., Lepidoptera from Chili, W. Bartlett-Calvert.—December, 1891. Life-history of *Plutella annulatella* Curt., N. M. Richardson. A new genus of Histeridæ, G. Lewis; *Epiechinus*. An Asiatic *Psychopsis* (*Ps. birmana* n. sp.),* R. McLachlan. A new species of *Aleurodes*,* J. W. Douglas, figs. Anno-

* Contains new species other than North American.

tated list of British Tachinidæ, R. H. Meade. Change of habit induced by local conditions, R. McLachlan.—January, 1892. Stylopized bees, R. C. L. Perkins. Neuroptera observed in the Channel Islands in September, 1891, R. McLachlan. Two new British Hemiptera, E. Saunders. On a toad killed by the larvæ of blow-flies, L. G. Guthrie. Observations on Coccidæ, A. C. F. Morgan. Double-broodedness: whether influenced by the state of the food-plant?, F. Merrifield. Local British lists, notes and captures.

ANALES DE LA SOCIEDAD CIENTIFICA ARGENTINA, xxxii, 5, Buenos Aires, November, 1891.—New Hymenoptera of the Argentine and Uruguayan faunas,* Dr. C. Berg (continued); *Procleticus*, *Lobepomis* n. gen. Argentine Dipterology (Syrphidæ),* F. L. Arribalzaga (continued).

LEPIDOPTERA INDICA by F. Moore. Part viii, London, 1891, pp. 153–176, pls. 57–64.

ZOOLOGISCHER ANZEIGER (Leipzig), Dec. 14, 1891.—Remarkable development of *Lucilia sylvarum* Meig., G. Duncker.—December 28th. The reproduction of *Peripatus Leuckartii* Sanger, A. Dendy. On the embryology of insects, N. Cholodkovsky. Observations on the successive coloring, etc., of the pupal wing cases of *Vanessa urticæ* and *Io*, Dr. F. Urech.

DIE TAGFALTER-RHOPALOCERA, von Georg Semper (Reisen im Archipel der Philippinen von Dr. C. Semper. Zweiter Theil. Wissenschaftliche Resultate, v, 6) Wiesbaden, 1891,* pp. 239–270, pls. 39–46.

MONOGRAPH OF THE BRITISH CICADÆ OR TETTIGIDÆ, G. B. Buckton. Part vii,* London and New York, Macmillan & Co., July, 1891. Vol. ii, pp. 97–128, pls. 59–68.

DIE SPINNEN AMERIKAS—BRASILIANISCHE SPINNEN von Graf. E. Keyserling nach dessen Tode herausgegeben von Dr. George Marx. Dritter Band. Nürnberg, 1891. Verlag von Bauer & Raspe (Emil Kuester), 278 pp., 10 pls. Ten new genera and many new species are described in this volume which treats of the Territelariæ.

LEHRBUCH DER VERGLEICHENDEN ENTWICKLUNGSGESCHICHTE DER WIRBELLOSEN THIERE von Dr. E. Korschelt und Dr. K. Heider. Specieller Theil. Zweites Heft. Mit 315 Abbildungen im text, Jena. Verlag von Gustav Fischer, 1891, pp. 309–908. This textbook of Comparative Development-histories of Invertebrate Animals has been very favorably reviewed by Prof. E. Ray Lankester ("Nature," Dec. 17, 1891), who states that an English translation is in preparation. This second number of the special part treats of the Crustacea, Palæostraca, Arachnoidea, Pentastomida, Pantopoda, Onychophora, Myriopoda and Insecta, and concludes with general statements on the Arthropoda. The Insecta occupy pp. 761–890. To each of the above eight groups a chapter is devoted in which

* Contains new species other than North American.

the respective subgroups are discussed as regards their 1, Embryonal development; 2, Metamorphoses; 3, Parthenogenesis, Pædogenesis and Heterogony; and 4, Summary of the group.

ATTI DELLA SOCIETA TOSCANA DI SCIENZE NATURALI, vii. Processi verbali. 10 May, 1891. List of the Cicindelidæ and Carabidæ collected near Livorno by Sign. N. Stoecklin and Dr. C. Lopez, C. Lopez. Contribution to the study of the digestive tube of Arthropoda—Histological and physiological researches on the digestive tube of Orthoptera, O. Visart.

OREGON AGRICULTURAL EXPERIMENT STATION, Bulletin No. 14, Entomology, F. L. Washburn, Corvallis, Or., 1891.

PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LONDON, 1891, Part III, Oct. 1, 1891.—On the Lycænidæ of the Solomon Islands,* H. H. Druce, 2 pls. On an interesting example of protective mimicry discovered by Mr. W. L. Sclater in British Guiana, E. B. Poulton, 1 pl.

BIOLOGIA CENTRALI-AMERICANA. Part xcvii, November, 1891.—Coleoptera: vol. iv, pt. 2, pp. 345–360, G. C. Champion, pls. xiv, xv; pt. 3, pp. 137–168,† D. Sharp; vol. vi, pt. 1, supplement, pp. 273–280,† M. C. Jacoby. Hymenoptera: vol. ii, pp. 153–176, P. Cameron, pl. x. Lepidoptera-Heterocera: vol. ii, pp. 9–24, H. Druce.

SOCIETE LINNEENNE DU NORD DE LA FRANCE (Amiens), 231, September, 1891.—Entomological notes [Hymenoptera], L. Carpentier.

ENTOMOLOGIST'S RECORD (London), ii, 12, Dec. 15, 1891.—Contains usual numerous notes on variations and captures of British insects.

BUTTERFLIES OF NORTH AMERICA, W. H. Edwards, 3d series, part xii, 1891.—Contains *Papilio americus, zolicaon, Chionobas Uhleri, varuna.*

ANNALES DE LA SOCIETE ENTOMOLOGIQUE DE FRANCE (6), x, 1e Trimestre, Aug. 8, 1890.—Descriptions of new or little-known Microlepidoptera,* A. Constant, 1 pl. Lepidoptera from the voyage of M. Ch. Allaud to Assinie, West Africa, in 1886,* P. Mabille, 2 pls. Descriptions of four new Lepidoptera,* id., *Parnia* n. gen. Formicidæ from the voyage of M. E. Simon to Venezuela, 1887–88,* C. Emery. On Arachnids from Temen,*† E. Simon. Arachnids from the expedition of Comte S. Teleki in eastern equatorial Africa in 1887–88,* id. Arachnids from the Marian Isles from M. A. Marche,*† id. Bulletin of Proceedings.—2e Trimestre, Nov. 26, 1890. Orthoptera from the voyage of M. E. Simon to Venezuela,*† I. Bolivar, figs. Hemiptera-Homoptera from the same,* L. Lethierry. Contributions to the Indo-Chinese fauna (Coleoptera),*† J. Bourgeois. Description of the larva of *Entomoscelis adonidis* Pall. and the nymph of *Quedius tristis* Grav., P. Lesne, figs. Malachidæ of Europe and neighboring countries, E. Abeille de Perrin, 4 pls. (continued in the next

* Contains new species other than North American. † Contains new genera.

two Trimestres). New or little-known Diptera, J. M. F. Bigot (Dolichopodi)*†. Bulletin*†: Olfaction in Lepidoptera, S. Alpheraky and in 3e Trimestre.—3e Trimestre, Feb. 25, 1891. Pselaphidæ from the voyage of M. E. Simon to Venezuela,*† A. Raffray. Essay on the classification of Pyralidæ,* E. L. Ragonot (continued in 4e Trimestre), 5 pls. Bulletin*†. —4e Trimestre, June, 1891. Supplementary note on the Coleoptera of Obock,* L. Fairmaire. Chrysomelidæ from the voyage of M. Ch. Allaud to Assinie,* E. Allard. Bulletin.*†

THE LIFE-HISTORY OF SPALGIS S-SIGNATA HOLL. by W. J. Holland ("Psyche," January, 1892, pp. 201–203, 1 pl.

ATTI DELLA SOCIETA VENETO-TRENTINA DI SCIENZE NATURALI RESIDENTE IN PADOVA, 1891.—Araneids of Lesina, G. Castelli. New species of *Phytoptus*,* G. Canestrini.

BULLETIN DE LA SOCIETE ZOOLOGIQUE DE FRANCE (Paris), xvi, 7, July, 1891. An error of sense in some insects of the family Dytiscidæ, X. Raspail.

IL NATURALISTA SICILIANO (Palermo), ix, 1, October, 1891.—On Sicilian Orthoptera, G. Riggio.

NEW SPECIES OF NORTH AMERICAN INSECTS DESCRIBED IN THE PRECEDING LITERATURE.

LEPIDOPTERA.

Copæodes candida Wright, Proc. Calif. Acad. Sci. (2), iii, p. 34, S. W. Calif.

New species of Geometridæ, H. Druce, Biol. Centr. Amer. pt. xcvii.

Ulophora, *U. Groteii*, N. Car., p. vii; *Glyptocera* (type *consobrinella* Z.) p. vii; *Laodamia* (type *fœcella* Z.), p. vii; *Lætilia* (type *coccidivora* Comst.), p. viii, new genera of Phycitidæ, Ragonot, Bull. Soc. Ent. France, 1890.

New genera and species of Pyralidæ, Ragonot, Ann. Soc. Ent. France, 1890, pp. 435–546.

COLEOPTERA.

In Biologia Centrali-Americana, pt. xcvii (see *ante*), new species of *Mordillistena* and Rhipidophoridæ are described by G. C. Champion, of Rhyncophora by Dr. D. Sharp, of Phytophaga by M. Jacoby.

Chevrolati Grouvellei, Croissandeau Bull. Soc. Ent. France, 1890, p. clvi, Mex.

Temnochilodes, *T. Dugesi*, Leveille, Bull. Soc. Ent. France, 1890, p. clxxxiii, Morelia, Mex.

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* Contains new species other than North American. † Contains new genera.

HYMENOPTERA.

New species of Crabronidæ and Pompilidæ, P. Cameron, Biol. Centr.-Amer. pt. xcvii.

DIPTERA.

New genera and species of Dolichopodi, Bigot, Ann. Soc. Ent. France, 1890, pp. 261–296.

Doings of Societies.

THE ENTOMOLOGICAL SOCIETY OF WASHINGTON, Dec. 3, 1891.—Under short notes Mr. Howard recorded the capturing on the window-sill of his residence, November 16th, an active female of *Mantis* (*Stagmomantis*) *carolina* Burm., thus giving a record of occurrence later than that previously recorded by Mr. Lugger, viz., November 11th.

Dr. Marx read a paper entitled "Life-history of *Tholyphonus giganteus* Lucas," in which, after dwelling on the importance of even fragmentary records of the history of little known or rare animals, he gave an account of his having kept in confinement the young of this arachnid for over a year. The specimen came from Florida to Prof. Riley, and was, when received, in its first stage and newly hatched. It fed readily on roaches and refused flies. A description was given of the first stage and also after the first skin had been cast, which did not occur for over a year.

Discussed by Messrs. Mann, Marx, Test, Ashmead, Schwarz, Howard, Banks and Marlatt.

Mr. Pergande presented a note on the "Peculiar Habits of *Ammophila gryphus* Smith." A very interesting description was given of the actions of a female of this insect about the site of a completed and closed burrow, in which later examinations showed that she had deposited the full grown larva of *Heterocampa* (*sub-albicans* Grt.) *manteo* Doub., having first deposited an egg about mid-way of the body of the host larva. A figure was exhibited showing the larva with the egg *in situ* together with the specimen itself and an example of the *Ammophila*.

Discussed by Messrs. Fox, Ashmead, Schwarz and Marlatt.

Mr. Linell presented a note on the N. A. species of *Valgus*, in which, after a reference to the bibliography of the three N. A. species of the genus, a table for their separation was given. Discussed by Mr. Schwarz.

Mr. Banks gave some notes on *Prodidomus rufus* Hentz, a spider which has not been seen since Hentz's time. His remarks comprised a reference to the bibliography of the species, a statement of its relationship and characteristics together with a careful description based on immature specimens found in a drawer among loose papers last Summer. Discussed by Messrs. Fox, Gill, Marx, Howard and others.

Mr. Chittenden presented by title a paper on "Food-habits of Chrysomelidæ."

Mr. Schwarz called attention to a statement by Dr. M. Busgen (in the latter's work on the honey-dew of Aphids) to the effect that the honey-dew is not secreted from the nectaries as hitherto supposed, but ejected from the anus. He also referred to an interesting work recently published by C. A. Piepers on migratory movements of butterflies on the island of Java, and gave a brief resumé of the author's explanation of these phenomena which are comparable to the nuptial flight observed in other insects.

January 7, 1892.—Election of officers for 1892 resulted as follows:

President, C. V. Riley; First Vice-President, C. L. Marlatt; Second Vice-President, Wm. H. Ashmead; Treasurer, E. A. Schwarz; Recording Secretary, Nathan Banks; Additional members of Executive Committee, Wm. H. Fox, Geo. Marx and B. E. Fernow.

The retiring President, Dr. Marx, delivered his annual address on "An Introduction to a Monograph of the American Ticks (Ixodidæ)." In an introductory chapter the author drew attention to the absence of monographic works which would attract and facilitate the work of the beginners in Arachnological studies, and also the inherent difficulties in the obscurity of many of the classificatory characters. He pointed out the nature and extent of the work already done in the various groups of Arachnida and followed with a reference to the bibliography of the writings both foreign and American on the ticks of this country.

A full chapter on the morphology of ticks followed, and also extended notes on the biology of these parasites in which personal observations were recounted, showing that ticks are not necessarily parasitic on warm-blooded animals, but may reach full growth, and in fact complete the cycle of their existence on a strictly vegetable diet, and also that ticks, after being gorged with blood, may revert to vegetable food. The address was discussed by various members.

C. L. MARLATT, *Recording Secretary.*

ERRATA.

Vol. II, p. 102, line 17 from bottom for not *read* but.
" " line 15 from bottom for at most *read* almost.

ENTOMOLOGICAL NEWS for January was mailed December 31, 1891.